

## Abstract

The present invention discloses a process for making rare earth (RE) doped optical fibre by using RE oxide coated silica nanoparticles as the precursor materia, more particularly the method of the present invention involves preparation of stable dispersions (sol) of RE oxide coated silica nanoparticles at ambient temperature and applying a thin coating on the inner surface of silica glass tube following dip coating technique or any other conventional methods, of the said silica sol containing suitable dopants selected from Ge, Al, P, etc., the coated tubes were further processed into optical preforms by following MCVD technique and fiberised in desired configuration, the novelty lies in eliminating the step of the formation of porous soot layer at high temperature by CVD process inside a fused silica glass tube for formation of the core and also in the elemination of the incorporation of the rare earth ions into the porous soot layer following the solution doping technique or other conventional methods, the direct addition of RE oxides in the sol eliminates the formation of microcrystalites and clusters of rare earth ions and prevents change in composition including variation of RE concentration in the core which results in increase in the reproducibility and reliability of the process to a great extent, further the addition of  $\text{Ge(OET)}_4$  at ambient temperature in the silica sol reduces the quantity of  $\text{GeCl}_4$  which is required at high temperature to achieve the desired Numerical Aperture.